

Preliminary Specification

Inverter for V296W1-L01

(I296W1-24-V00)

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Preliminary

REVISION HISTORY

Version	Date	Page (New)	Section	Description
Ver 0.0	June 16 '03	All	All	Initial issue of a tentative specification
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1. GENERAL DESCRIPTION

1.1 OVERVIEW

This document describes the specifications for an inverter for V296W1- L01, which is a 30" TFT Liquid Crystal Display module with 16-CCFLs. This inverter receives the 24-volt input and supplies 4.5 mA output current to each 16 CCFLs.

1.2 FEATURES

- Input voltage 24 Vdc
- Output current 4.5 mA/CCFL
- Analogue dimming function
- Digital on/off control function
- Safety protection function

1.3 APPLICATION

- TFT LCD TVs

1.4 SUMMARIZED SPECIFICATIONS

Item	Specification	Unit	Note
Outline dimension	320 typ. (H) x 120 typ. (V)	mm	(1)
Thickness	1.2 typ.	mm	
Input voltage	24 typ.	V _{DC}	-
Dimming voltage	0 – 3 typ.	V _{DC}	-
On/off control voltage	5 typ.	V _{DC}	-
Output current	4.5 typ.	mA/CFL	-
Oscillation frequency	60 typ.	kHz	-
Dimming frequency	160 typ.	Hz	-
Minimum duty ratio	20 max.	%	-

Note (1) Please refer to the attached drawings for more information.



2. ABSOLUTE MAXIMUM RATINGS

2.1 ABSOLUTE MAXIMUM RATINGS OF ENVIRONMENT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T _{ST}	-20	+60	°C	(1)
Operating Ambient Temperature	T _{OP}	0	+50	°C	(1), (2)
Shock (Non-Operating)	S _{NOP}	-	(100)	G	(3), (5)
Vibration (Non-Operating)	V _{NOP}	-	(1.0)	G	(4), (5)

Note (1) Temperature and relative humidity range is shown in the figure below.

(a) 90 %RH Max. ($T_a \leq 40$ °C).

(b) Wet-bulb temperature should be 39 °C Max. ($T_a > 40$ °C).

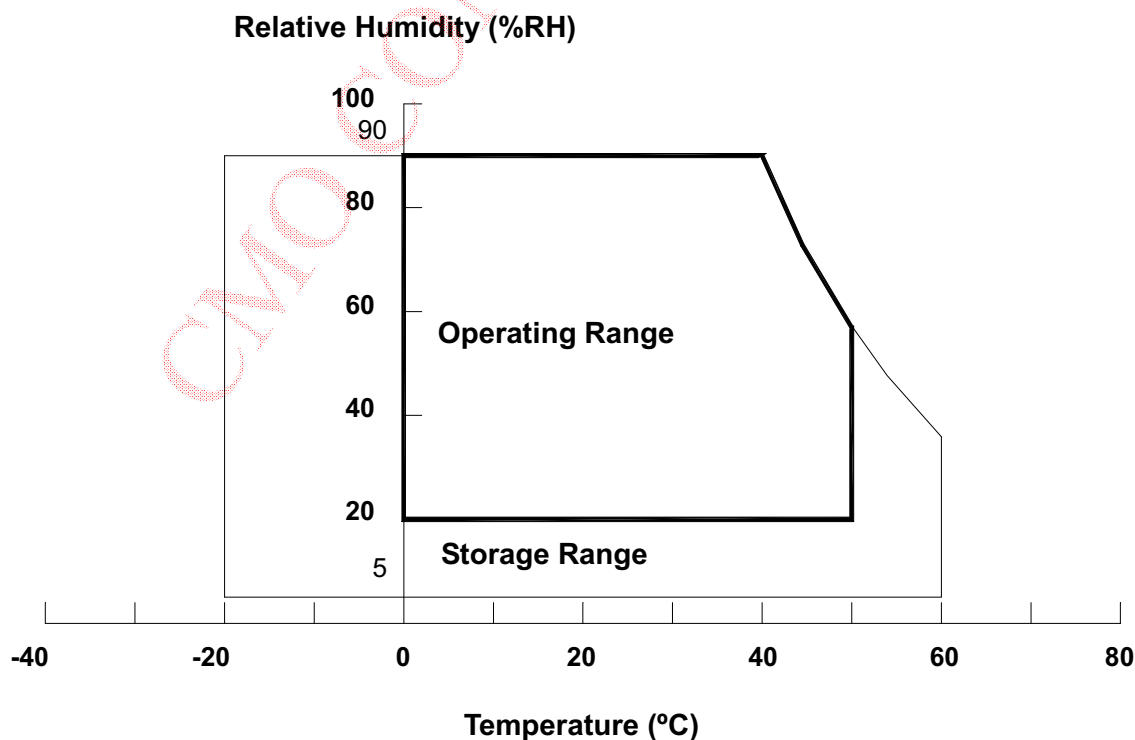
(c) No condensation.

Note (2) The temperature of panel display area surface should be 0 °C Min. and 60 °C Max.

Note (3) 2 ms, half sine wave, 1 time for $\pm X$, $\pm Y$, $\pm Z$.

Note (4) 10 ~ 500 Hz, 10 min, 1 time each X, Y, Z.

Note (5) At testing Vibration and Shock, the fixture in holding the module has to be hard and rigid enough so that the module would not be twisted or bent by the fixture.



2.2 ABSOLUTE MAXIMUM RATINGS OF ELECTRICAL INPUT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Input Voltage	V_{BL}	0	30	V	-
On/Off control voltage	V_{BLON}	-0.3	7	V	
Internal/External PWM Select Voltage	V_{SEL}			V	
Internal PWM Control Voltage	V_{IPWM}			V	
External PWM Control Voltage	V_{EPWM}			V	-

3. ELECTRICAL CHARACTERISTICS

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Input Voltage		V_{BL}	18	24	25	V	-
Input Current	$V_{DIM}=0\text{ V}$	I_{BL}	—	4.4	—	A	-
Input inrush current		-	-	-	6.82	A_{peak}	
Power consumption		W_{BL}	-	106	-	W	
Output current		I_L	-	4.5	-	mA	(1)(2)
Oscillation frequency		F_W	-	60	-	kHz	
Dimming frequency		F_B	-	160	-	Hz	
Minimum duty ratio		D_{MIN}	-	10	20	%	
Internal/External PWM Select Voltage	HI	V_{SEL}	2	-	5	V	
	LO		0	-	0.8	V	
Internal/External PWM Select Current		I_{SEL}	-1	-	1.5	mA	
Internal PWM Control Voltage	MAX	V_{IPWM}	-	0	-	V	
	MIN		-	3	-	V	
Internal PWM Control Current		I_{IPWM}	$V_{SEL}=L$	-1	-	1.5	mA
External PWM Control Voltage	Hi	V_{EPWM}	2	-	5	V	
	Lo		0	-	0.8	V	
External PWM Control Current		I_{EPWM}	I_{EPWM}	-1	-	1.5	mA
On/Off control voltage	On	V_{BLON}	2	-	5	V	-
	Off		0	-	0.8	V	-
On/Off control current		I_{BLON}	-1	-	1.5	mA	-

Note (1) Discharge current for each CFL

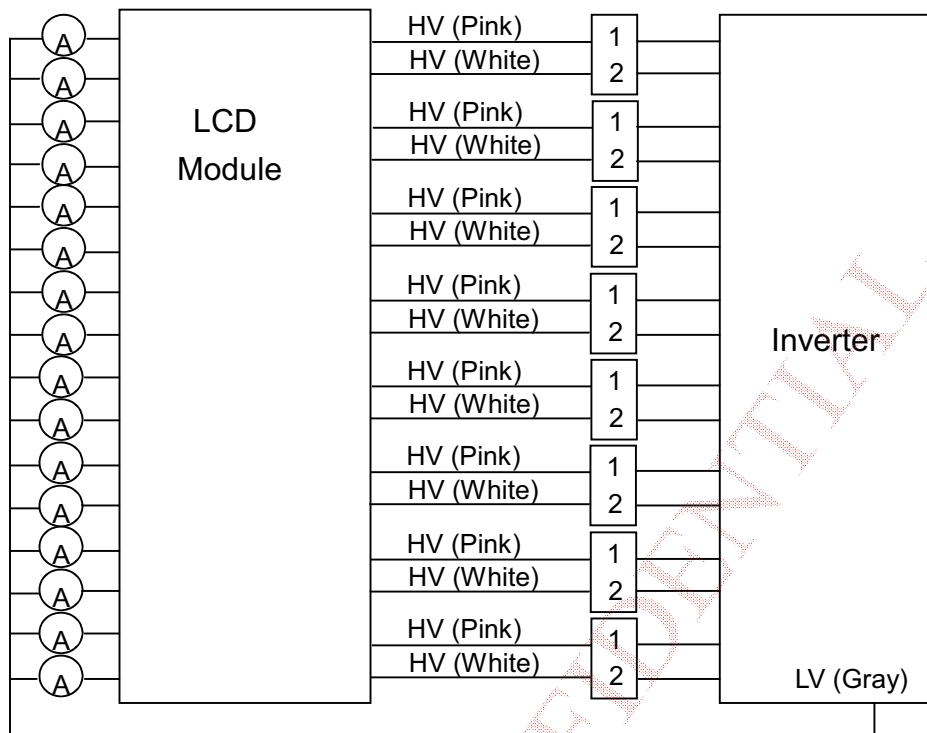
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Note (2) Lamp current should be measured by utilizing high frequency current meters as shown below:



4. INPUT/OUTPUT INTERFACE

4.1 INPUT CONNECTORS

CN1:S10B-PH-SM3-TB(JST)

	Signal name	Feature
1	V _{BL}	+24 V
2		
3		
4		
5		
6	GND	GND
7		
8		
9		
10		

CN2: S12B-PH-SM3-TB(JST)

	Signal name	Feature
1	V _{BL}	+24 V
2		
3		
4		
5		
6	GND	GND
7		
8		
9	SEL	Internal/External PWM Selection
10	E_PWM	External PWM Control
11	I_PWM	Internal PWM Control
12	BLON	BL ON/OFF

VDIM Logic	BLON Logic
0 V: Dimming maximum	H: Lighting ON
3 V: Dimming minimum	L: Lighting OFF



4.2 OUTPUT CONNECTORS

CN3-CN10: SM02(8.0)B-BHS-1-TA(JST)

	Signal name	Feature
1	CFL HOT	CFL High voltage
2	CFL HOT	CFL High voltage

CN11: S2B-ZR-SM3A-TF(JST)

	Signal name	Feature
1	CFL COLD	CFL Low voltage
2	CFL COLD	CFL Low voltage

5. PRECAUTIONS

5.1 ASSEMBLY AND HANDLING PRECAUTIONS

- (1) Do not apply rough force such as bending or twisting to the inverter during assembly.
- (2) During assembling the inverter into a LCD module, dust and oil may cause electrical short.
- (3) Do not pull in or pull out the I/F connector while the module is in operation.
- (4) Do not disassemble the inverter.
- (5) When ambient temperature is lower than 10°C, the starting voltage of CCFL will be higher than that in room temperature.

5.2 SAFETY PRECAUTIONS

- (1) The operating voltage of Backlight is approximately 1000 Volts. It may cause electrical shock while assembling with inverter. Do not disassemble the module or insert anything into the Backlight unit.
- (2) After the module's end of life, it is not harmful in case of normal operation and storage.

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